

Appl. N . 09/705,101

REMARKS

New claims 67-81 are added. Claims 1-81 are pending in the application.

New independent claims 67 is patterned after claim 1 as combined with a partial listing of claim 11. New dependent claims 68-81 are patterned after claims 2-13 which depend from claim 1. Accordingly, there is no new matter.

Applicant requests substantive examination of the pending claims 1-81.

Respectfully submitted,

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Group Art Unit 1742
Examiner Not Yet Assigned
Attorney's Docket No. 30-5076(4015)
Title: Physical Vapor Deposition Targets, and Methods of Fabricating Metallic
Materials

VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING
RESPONSE TO DATE OFFICE ACTION

In the Claims

The claims have been amended as follows. Underlines indicate insertions and
~~strikeouts~~ indicate deletions.

67. (New) A physical vapor deposition target comprising a copper material with a
face centered cubic unit cell, having a sputtering surface, and comprising:
a predominate <220> crystallographic texture across the sputtering
surface; and
an average grain size across the sputtering surface of less than or equal
to about 30 microns.
68. (New) The physical vapor deposition target of claim 67 further
comprising one or more of aluminum, silver, and gold.
69. (New) The physical vapor deposition target of claim 68 comprising
aluminum.

70. (New) The physical vapor deposition target of claim 68 comprising silver.
71. (New) The physical vapor deposition target of claim 68 comprising gold.
72. (New) The physical vapor deposition target of claim 67 wherein the average grain size across the sputtering surface is less than or equal to 1 micron.
73. (New) The physical vapor deposition target of claim 67 further comprising substantially no pores or voids proximate the sputtering surface.
74. (New) The physical vapor deposition target of claim 67 wherein the predominate <220> crystallographic texture is a strong <220> crystallographic texture.
75. (New) The physical vapor deposition target of claim 67 comprising a ratio of the <220> crystallographic orientation to all other orientations of the face centered cubic unit cell of at least about 80%.
76. (New) The physical vapor deposition target of claim 67 comprising a ratio of the <220> crystallographic orientation to all other orientations of the face centered cubic unit cell of at least about 90%.
77. (New) The physical vapor deposition target of claim 67 wherein substantially all of the grain sizes across the sputtering surface are less than about 30 microns.

78. (New) The physical vapor deposition target of claim 67 wherein substantially all of the grain sizes across the sputtering surface are less than 1 micron.
79. (New) The physical vapor deposition target of claim 67 wherein the <220> texture comprises predominately axial <220> orientations.
80. (New) The physical vapor deposition target of claim 67 wherein the <220> texture comprises predominately planar <220> orientations.
81. (New) The physical vapor deposition target of claim 67 wherein any precipitates present in the target have a maximum dimension of 0.5 micron.